

REMARKS

In view of the above amendments and the following remarks, reconsideration of the rejections contained in the Office Action of June 12, 2003 is respectfully requested.

The substitute specification filed on May 30, 2003 has been amended to correct several obvious editorial mistakes. However, it is submitted that these corrections do not incorporate any new matter. Thus, the Examiner is respectfully requested to enter the amendments to the specification.

The Examiner has rejected claims 8 and 9 under 35 USC § 112, first paragraph, as containing subject matter that was not sufficiently described in the specification. In particular, the Examiner asserts that no support for the subject matter of claims 8 and 9 is found in the specification, and that page 10, lines 11-14 of the substitute specification “would appear to indicate that ultraviolet adsorption and differential refraction are alternatives to use of an evaporative light-scattering detector as opposed to techniques used in conjunction with an evaporative light-scattering detector.” However, claims 8 and 9 have now been slightly amended to clarify the subject matter recited therein, and the Examiner’s rejections of claims 8 and 9 are respectfully traversed for the reasons discussed below.

The subject matter of claims 8 and 9 is disclosed in paragraph 51 on page 10 of the specification. This paragraph is located in a portion of the specification discussing the analysis of the additives, and directly follows a paragraph explaining that the evaporative light-scattering detector is used because it can detect any substances and has sufficient detecting sensitivity at practical concentration levels of additives. However, paragraph 51 then explains that ultraviolet absorption and differential refraction are also processes used to detect a separated component (i.e., the separated additive), and further explains that *these processes may be combined with each other to detect all of the components*. When viewed within the context of the surrounding portions of the specification, it is submitted that the subject matter described in paragraph 51 on page 10 of the substitute specification clearly provides a description of additional elements of the separating and quantifying step of the present invention. The Examiner is requested to note that dependent claims 8 and 9 have now been slightly amended so that they clearly describe the subject matter recited in paragraph 51

on page 10 of the substitute specification. Consequently, it is respectfully submitted that the Examiner's rejections of claims 8 and 9 under 35 USC § 112 have been overcome.

The Examiner has rejected claims 5 and 7-9 as being unpatentable over either the Eckles reference (USP 4,326,940) or the Heberling reference (PC FAB, August 1989, pp. 72-84) in view of either the O'Donohue reference (6,151,113) or the Kibbey reference (USP 5,670,054). In addition, dependent claim 6 has been rejected as being unpatentable over either the Eckles reference or the Heberling reference in view of either the O'Donohue reference or the Kibbey reference, and further in view of either the Heckenberg reference (USP 5,279,972) or the Gjerde reference (USP 5,772,889). However, independent claim 5 has now been amended so as to clarify the separating and quantifying step recited therein. As a result, for the reasons discussed below, it is respectfully submitted that amended independent claim 5 and the claims that depend therefrom are clearly patentable over the prior art of record.

Amended independent claim 5 is directed to a method of managing a plating liquid composition, including sampling a plating liquid in a plating bath, separating and quantifying an additive in the sample plating liquid using liquid chromatography, comparing the quantified value of the additive with a given predetermined concentration of the additive, and adding a solution including the additive to the plating liquid based on the compared result. The process of separating and quantifying the additive using liquid chromatography includes introducing the sampled plating liquid and pure water into a separating column to remove ionic components from the plating liquid before the additive is quantified, introducing the ionic component-free sampled plating liquid and a hardly soluble liquid into the separating column to elute the additive, and detecting the intensity of light scattered by an unevaporated solute including the eluted additive remaining after the ionic component-free sampled plating liquid has been evaporated through spraying. The amended portions of independent claim 5 are described in detail in paragraphs 56-58 on pages 11 and 12 of the substitute specification.

The Heckenberg reference discloses a process for analyzing samples for ion analysis, and the Examiner asserts that this reference teaches that it is desirable to remove unwanted ions prior to chromatographic separation. However, as explained in column 2, lines 36-61, the Heckenberg

reference discloses using an *ion-exchange fiber or membrane* to remove unwanted ions *prior to* chromatography. In contrast, the present invention utilizes liquid chromatography to remove unwanted ions as recited in amended independent claim 5. Moreover, it is submitted that the Heckenberg reference does not disclose or suggest separating and quantifying an additive using liquid chromatography by introducing the sampled plating liquid and pure water into a separating column to remove ionic components from the plating liquid, and then introducing the ionic component-free sampled plating liquid and a hardly soluble liquid into the separating column to elute the additive.

The Gjerde reference discloses a method for performing nucleic acid separations using liquid chromatography, and the Examiner asserts that this reference teaches that ions cause peak distortion and removing them removes the problem. However, the Gjerde reference also does not disclose or suggest separating and quantifying an additive using liquid chromatography by introducing a sampled plating liquid and pure water into a separating column to remove ionic components from the plating liquid, and introducing the ionic component-free sampled plating liquid and a hardly soluble liquid into the separating column to elute the additive.

The Eckles reference, the Heberling reference, the O'Donohue reference, and the Kibbey reference also do not either alone or in combination, disclose or suggest separating and quantifying an additive in the sampled plating liquid using liquid chromatography as now recited in amended independent claim 5. Therefore, one of ordinary skill in the art would not be motivated to modify or combine the references so as to obtain the invention as recited in amended independent claim 5. Accordingly, it is respectfully submitted that amended independent claim 5 and the claims that depend therefrom are clearly patentable over the prior art of record.

In view of the above amendments and remarks, it is submitted that the present application is now in condition for allowance. However, if the Examiner should have any comments or suggestions to help speed the prosecution of this application, the Examiner is requested to contact the Applicant's undersigned representative.

Respectfully submitted,

Akira FUKUNAGA et al.

By: 

W. Douglas Hahm
Registration No. 44,142
Attorney for Applicant

WDH/gtg
Washington, D.C. 20006-1021
Telephone (202) 721-8200
Facsimile (202) 721-8250
October 10, 2003